

## **TITLE: Impr v d portable st ne cutter**

### **BACKGROUND OF THE INVENTION**

The present invention relates to stone cutting apparatus and more particularly to an improved portable stone cutter by  
5 which a large piece of stone can be cut.

Fig. 1 shows a prior art portable stone cutter 1 which comprises generally a motor 2 sustained by a support arm 7, a transmission shaft 3 actuated by the motor 2 via a belt to operate a circular saw blade 4, a slidable table 6 disposed  
10 on a base 5. So that a piece of stone 8 can be put on the table 6 to slidably cut by the circular saw blade 4. This type of portable stone cutter 1 can only suit to cut small piece of stone and very difficult to cut a large sized piece of stone. For instance, if a large sized piece of stone 8 is to be cut  
15 and cutting line nears one side, the support arm 7 will hinder the stone 8 from moving forward except turn it for 180 degrees to avoid the support arm 7 from obstructing the movement of the stone 8. However, if the wide b larger than wide a, a large porting of the stone 8 should be exposed to outside of  
20 the table 6. So that the hands of the operator could not accurately control the stone. Thus the result is not ideal or subjected to project upward.

### **SUMMARY OF THE PRESENT INVENTION**

The present invention has a main object to provide an  
25 improved portable stone cutter which suits to cut large or

small sized piece of stone and to enable the operator to precisely control the movement of the working piece toward the saw blade, thus the cutting result is acceptable.

Another object of the present invention is to provide an improved portable stone cutter which does not enlarge the volume in comparison with the prior art portable stone cutter in order to facilitate the packing for transportation.

Further object of the present invention is to provide an improved portable stone cutter in which a movable tool plate is provide to enable the operator to put tools required.

Accordingly, the improved portable stone cutter of the present invention comprises generally a framed base, a working table slidably disposed on a pair of longitudinal sliding bar of the base, a motor sustained by an arcuate support arm on front end of the base, a supplementary support arm on a front end of the base opposite to the support arm, a guarded circular saw blade on a front portion of the base operated by the motor via a transmission shaft and a belt, and a tool plate movably disposed on a lateral side of the base. The stone cutter of the present invention is characterized in that both the arcuate support arm and the supplementary support arm define a large space therebetween to enable a large sized piece of stone passing through without obstruction and a movable tool plate facilitates the operator to put required tools.

The present invention will become more fully understood by reference to the following detailed description thereof when read in conjunction with the attached drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5        Figure 1 is a perspective view of a portable stone cutter according to a prior art,

      Figure 2 is a perspective view to show a portable stone cutter of the preferred embodiment according to the present invention,

10       Figure 3 is an exploded perspective view to show the details of the arcuate support arm,

      Figure 4 is an exploded perspective view to show the details of the L-shaped support frame and the movable tool plate,

15       Figure 5 is a top view of the portable stone cutter of the present invention,

      Figure 6 is an underside view of the portable stone cutter of the present invention,

      Figure 7 is a rearside view of the portable stone cutter of the present invention, and

20       Figure 8 is a sectional view the connection of the tool plate with a lateral bar of the base.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

      With reference to Figs. 2 to 7 of the drawings, the improved portable stone cutter of the present invention comprises a  
25    base 10 which is of a rectangular frame composed of a pair

of longitudinal bars and a pair of transverse bars, a pair of first and second outer longitudinal bars 12 and 13 respectively disposed on the outmost lateral side of the base 10, a pair of longitudinal sliding bars 14 and 15 spacedly disposed inside the base 10 and a working table 11 slidably disposed on the pair of longitudinal sliding bars 14 and 15 wherein the first outer longitudinal bar 12 has a pair of vertical through holes 121 and 122 spacedly formed in a front portion, and the second outer longitudinal bar 13 has three horizontal screw holes 131, 132 and 133 spacedly formed in front portion either, an arcuate support arm 20 including a clamp 21 on lower end clamping on the first outer longitudinal bar 12 having an aligned central hole 22 engaged with the vertical through hole 121 and rotatably secured by a screw 221 and a crescent slot 23 engaged with the through hole 122 and secured by an adjustment lock 231 so that the arcuate support arm 20 can be rotated on the screw 221 and the crescent slot 23 may slide or secure by the adjustment lock 231, a vertical and a vertical through hole 24 and a vertical screw hole 25 spacedly formed in the top of the arcuate support arm 20 and a tubular pin 242 inserted into the through hole 24, an U-shaped clamp 26 clamped on the upper end of the arcuate support arm 20 having a pair of through holes 261 and 262 spacedly formed in upper portion, a through hole 263 in the lower portion thereof made in registry with the through

hole 261 and the through hole 24 and secured by screw 241 and nut 243 whereas the through hole 262 engaged with the screw hole 25 and secured by an adjustment lock 251 and a coupling plate 27 on a lateral side of the U-shaped clamp 26 including  
5 a through hole 272 engaged with a screw hole 52 under a motor 50 on front end of the base 10 and secured by a knobbed screw 271, the motor 50 having a tubular screw hole 53 secured to an inner surface of the coupling plate 27, a supplementary support arm 30 disposed to a front lateral side of the base  
10 10 opposite to the arcuate support arm 20 and composed of a L-shaped upper bar 31 and an A-shaped seat wherein the L-shaped upper bar 31 has a lateral coupling plate 311 including a through hole 312 at free end engaged with another protrudent screw hole 54 of the motor 50 and releasably secured by screw  
15 34, a small triangular reinforcement plate 35 inside the junction and a lower end integrated with the peak of the A-shaped seat which is combined with a first and second tilt bars 32 and 33 and a reinforcement transverse bar 39, the first tilt bar 32 having an inverse U-shaped clamp 321 and  
20 a lateral coupling plate 322 including a through hole 323 at free end respectively engaged with the second outer longitudinal bar 13 and the screw hole 131 and releasably secured by screw 36, the second tilt bar 33 having an inverse U-shaped clamp 331 and a pair of lateral coupling plates 332  
25 each including a through hole 333 respectively engaged with

the second outer longitudinal bar 13 and the screw holes 132 and 133 and releasably secured by two screws 37, and a large triangular reinforcement plate 38 integrated within the junction between the L-shaped upper bar 31 and the A-shaped seat, a guarded circular saw blade 51 disposed to a front portion of the base 10 connected with and operated by the motor 50 via a belt 501 and a transmission shaft 502, finally, a tool plate 40 movably connected to the first outer longitudinal bar 12 (as shown in Figs. 4 and 8). The tool plate 40 has a plurality of horizontal protrudent pieces 41 and a plurality of vertical protrudent pieces 42 alternately formed along the front edge, a pair of introverted hollow interior lateral walls 43 under lateral edges each including a screw hole 431 in front end and each of the screw holes 431 having a hollow frustum means on inner side and a pair of bolts 441 screwed into the screw holes 431 and secured by nut 44. When assembles the tool plate 40 with the base 10, the vertical protrudent pieces 42 stops against the inner side 123 of the first outer longitudinal bar 12 and the head of the bolts stop against the outer side 124 of the first outer longitudinal bar 12. So that the tool plate 40 is fixed. If turn the head of the bolts 441 clockwise to move the bolts 441 inward, the tool plate 40 is loosened up and enables to slide along the first outer longitudinal bar 12 or to remove from the base 10.

Due to a greater space is defined between the arcuate support 20 and the supplementary support arm 30, in operation a large sized piece of stone can be passed through the apace without obstruction. The motor 50 is commonly supported  
5 by two support arms 20 and 30 that will be more stable. Besides, the adjustment lock 231 can be unfastened to permit the arcuate support arm 20 to turn a certain degree on the screw 221 and both the supplementary support arm 30 and tool plate 40 are removable to reduce the volume of the stone cutter to  
10 facilitate packing for transportation. After the supplement support arm 30 is removed, the motor 50 is still supported by the arcuate support arm 20 without taking apart.

Further, the tool plate 40 can be either engaged with the first outer longitudinal bar 12 or the second outer  
15 longitudinal bar 13 and avoids the operator to forget the tools and to give convenience to use the tools.

Note that the specification relating to the above embodiment should be construed as an exemplary rather than as a limitative of the present invention, with many variations  
20 and modifications being readily attainable by a person of average skill in the art without departing from the spirit or scope thereof as defined by the appended claims and their legal equivalents.